

Editorial: Special Session on Dynamic Workflow Management

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Today's business organizations are characterized by global, dynamic, uncertain and error-prone environments. In order to compete in such contexts, enterprises need to effectively stay adaptable to environmental and internal changes, constantly reconsider and optimize business processes, and rapidly develop new services and products to support evolving business. The adaptability in all aspects of workflow management (such as modeling, validation, and execution) becomes of a paramount importance. The research on workflow management has been around for a couple of decades, and many approaches and tools have been developed and gained certain range of practical applications. However, how to dynamically assess the constantly changing conditions and adapt workflows accordingly still remain as huge challenges in both academic and industry worlds.

As workflow systems currently provide little support for such challenges, the goal of this special session is to provide researchers with an opportunity to discuss how workflow systems can better deal with these issues. Seven papers are included in this special issue and summarized as follows.

The first paper is written by Xiping Song, Minmin Han and Thomas Thiery. It presents an analysis of past research in managing medical workflow exceptions, and proposes future research that would benefit the medical applications. The paper is focused on three topics: representing, handling and analyzing workflow exceptions.

The second paper is written by William Tepfenhart, Jiacun Wang, Daniela Rosca and Anni Tsai. It introduces a resource-constrained and decision support workflow model. The work is driven by the unique requirements of incident command system workflow management, where the workflow is dynamic and the workflow correctness is critical to mission success.

The third paper addresses issues with product data management. It proposes a conceptual design configuration framework which serves as a guideline to identify the configuration items in conceptual design

phase. It also presents a closed-loop design change control workflow. The paper is co-authored by Jiun-Yan Shiao and Xiangyang Li.

The fourth paper aims at enhancing workflow adaptability. It presents a workflow model that accommodates dynamic changes and supports formal correctness verification. The method is based on the concept of executable path of a workflow. The paper is written by Jian Cao, Haiyan Zhao, Jie Wang, Shensheng Zhang and Minglu Li.

The fifth paper, co-authored by Weixiang Sun, Tao Li, Wei Peng and Tong Sun, presents a workflow mining algorithm that is able to mine process models with optional tasks. It also proposes an incremental mining algorithm based on intermediate relationships such as ordering and independence.

The sixth paper focuses on the automatic recovery techniques of workflows. Written by Wanyu Zang, Meng Yu and Peng Liu, this paper presents a dead-lock free attack recovery algorithm for distributed transactional processes.

The last paper is written by Paul Austin, Tao Liang, Patricia Wall and Scott Weber. It proposes a rule-based prototype as an alternative to traditional workflow applications for *case-based* business processes, and presents a prototype system called *CaseFlow* that uses a rule-based workflow engine and organizes information around the concept of a case.

As guest editors we are very satisfied both with the quality of the papers presented in this issue, and with the relevance on the themes we hoped to put focus on via this special issue. We would like to take the opportunity to thank all authors who submitted papers for the special issue as well as the anonymous reviewers for helping us. Without your help it would have been impossible to produce this special issue.

We hope you will enjoy the result of the efforts.

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